



## CARDIOVASCULAR RECEIVING CENTER CRITERIA

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### I. AUTHORITY:

*Health and Safety Code, Division 2.5, Sections 1797.67, 1797.220, 1798, and 1798.170; CCR, Title 22, Division 9, Chapter 7.1.*

### II. APPLICATION:

**This policy establishes a STEMI critical care system and** defines the requirements for designation as an Orange County Cardiovascular Receiving Center (CVRC) to receive patients transported by the emergency medical services system with ST-elevation myocardial infarction that may benefit by rapid assessment and treatment at a dedicated cardiovascular specialty center.

A CVRC will provide specialized cardiovascular care for patients presenting via the 9-1-1 system or by emergency interfacility transfer from an Orange County Emergency Medical Services (OCEMS) Emergency Receiving Center assigned to that CVRC. Patients eligible for 9-1-1 field triage or transfer to a CVRC include those who meet OCEMS criteria for triage as an ST Elevation Myocardial Infarction or post cardiac arrest with return of spontaneous circulation (ROSC).

**Per OCEMS policy #600.00, non-CVRC hospitals shall have transfer processes through interfacility transfer agreements and have pre-existing agreements with EMS ambulance providers for rapid transport of STEMI patients to a CVRC. This policy may serve as a demonstration of transfer agreements between ERCs and CVRCs.**

### III. DESIGNATION:

#### A. Initial Designation Criteria:

1. Hospitals meeting Title 22 requirements and designated as an Emergency Receiving Center (ERC) that are in good standing and interested in designation as a Cardiovascular Receiving Center (CVRC) should submit a request to OCEMS.
2. The hospital shall:
  - a. Possess a current California Department of Public Health permit for emergency cardiac catheterization laboratory service and cardiac catheterization laboratory shall meet or exceed current ACC/AHA standards for volume and perform a minimum of 200 total Percutaneous Coronary Intervention (PCI) procedures annually.
  - b. Maintain an equipped and appropriately staffed cardiac catheterization laboratory with high resolution digital imaging capability.
  - c. Maintain appropriate inventory of interventional cardiovascular equipment in multiple sizes.
  - d. Maintain Intra-aortic balloon pump capability.
  - e. Provide a method for receiving transmitted electrocardiograms from EMS field units (dedicated email address or facsimile) on a continuous 24 hour basis.
  - f. Have available, cardiovascular surgery services on a continuous basis.
3. OCEMS will evaluate the request and determine the need for an additional CVRC. If such a need is identified, OCEMS will request the interested hospital to provide:
  - a. Policies, procedures, and agreements as described in Section VI of this policy.



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4. OCEMS will review the submitted material, perform a site visit and meet with hospital representatives. In addition, the following information will be collected by OCEMS and considered in the designation process:
    - a. Emergency department diversion and ambulance patient off-load time statistics for the past three years.
    - b. Emergency inter-facility transfers during the past three years, including transfers for higher level of care management of STEMI Patients.
  5. Following review, the OCEMS will provide its designation decision to the Facilities Advisory Subcommittee and the Emergency Medical Care Committee for endorsement or denial of endorsement for designation of up to three years as a CVRC.
  6. An approved CVRC will have a written agreement as described in Section VI of this policy and pay the established Health Care Agency fee.
- B. Continued Designation
1. OCEMS will review each designated CVRC for compliance to criteria as described in this policy every three years or more often if deemed necessary by the OCEMS Medical Director. Each CVRC will be required to submit specific written materials to demonstrate evidence of compliance to criteria established by this policy and pay the established fee. A site visit may be required at the discretion of the OCEMS Medical Director.
  2. OCEMS will provide its designation decision to the Facilities Advisory Subcommittee and the Emergency Medical Care Committee for endorsement or denial of endorsement for continued designation of up to three years.
- C. Change in Ownership/Change in Executive or Management Staff
1. In the event of a change in ownership of the hospital, continued CVRC designation will require adherence to this policy with review and approval of continued designation by the OCEMS Medical Director. Change in hospital ownership may require redesignation by OCEMS.
  2. OCEMS shall be notified, in writing, at least 10 days prior to the effective date of any changes in key CVRC personnel as identified in Section IV, (A) and (B) below.
- D. Denial / Suspension / Revocation of Designation
1. OCEMS may deny, suspend, or revoke the designation of a CVRC for failure to comply with any applicable OCEMS policy or procedure.
    - a. Failure to comply with data submission requirements for three (3) consecutive months will result in automatic suspension of CVRC designation.
  2. The process for appeal of suspension or revocation will adhere to OCEMS policy #640.00 and #645.00.
- E. Cancellation of Designation by CVRC
1. CVRC designation may be cancelled by the CVRC upon 90 days written notice to OCEMS.

#### IV. MEDICAL PERSONNEL:

**The hospital shall create job descriptions and an organizational structure clarifying the relationship between the CVRC (STEMI) Medical Director, CVRC (STEMI) Program Coordinator (Manager), and the STEMI team.**



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### A. CVRC Medical Director

1. The hospital will designate a medical director for the cardiovascular program who is a physician **board-eligible or board certified by the American Board of Medical Specialties (ABMS)** with a sub-specialty certification in Cardiovascular Disease.
2. Board Certification in Interventional Cardiology is desired.
3. Responsibilities of the Medical Director include:
  - a. Development of hospital policies as defined in Section VI.
  - b. Development and maintenance of the hospital CVRC performance/quality improvement plan.
  - c. Development and maintenance of a cardiovascular continuing education program within the hospital with an offering of yearly category 1 CME for physicians and BRN CE for nursing staff.
  - d. Attendance at county-wide CVRC system meetings.

### B. CVRC Program Coordinator

1. A Registered Nurse will serve as the Cardiovascular Receiving Center Coordinator who may also be the critical care department director, emergency department director or other similar position.
2. Responsibilities of the CVRC Coordinator include:
  - a. Development of nursing cardiovascular education programs (standardized national programs are acceptable to fulfill this responsibility).
  - b. Collection and reporting of required (section VII) CVRC data elements to OCEMS on a monthly basis.
  - c. Attendance at the hospital CVRC performance/quality improvement program meetings.
  - d. Development of a cardiovascular education and outreach program for local and community and assigned regional hospitals.

### C. On-Call Physician Specialists / Consultants

1. Interventional Cardiologists providing on call coverage 24 hours/day 365 days/year who must be promptly available within 30 minutes of notification.
2. Interventional Cardiologist credentialed by the CVRC Medical Staff Committee and available for emergency call panel assignment.
3. Cardiovascular surgeon credentialed by the CVRC Medical Staff Committee and available for emergency call panel assignment.

### D. Additional Personnel:

1. Experienced nursing and technical laboratory staff with training in interventional laboratories. Cardiac catheterization laboratory personnel must have demonstrated competency treating acutely ill patients with hemodynamic and electrical instability.
2. A dedicated cardiovascular catheterization laboratory team to perform primary PCI with a written on call schedule for operation of the cardiac catheterization laboratory 24 hours per day, 365 days per year.



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3. **Cardiac catheterization laboratory team able to be contacted via a single call activation system and be available within 30 minutes of notification.**
4. Nurses or technicians trained in intra-aortic balloon pump management.
5. Intensive Care Unit nursing staff who have demonstrated competency with invasive hemodynamic monitoring, temporary pacemaker operation and intra-aortic balloon pump management and other mechanical ventricular support devices.

### V. HOSPITAL SERVICES:

In addition to those services required of an Emergency Receiving Center, the CVRC will provide the following:

- A. Inpatient acute cardiovascular rehabilitation services available for all patients referred to the hospital through the OCEMS Cardiovascular Receiving Center triage system.
- B. A cardiovascular education program available to hospital staff, other regional hospital staffs, EMS personnel and the public, provided at the appropriate level for each group.

### VI. HOSPITAL POLICIES / AGREEMENTS:

- A. The hospital will have a written agreement with OCEMS indicating the concurrence of hospital administration and medical staff to meet the requirements for CVRC program participation as specified in this policy.
- B. At all times (excepting closure due to internal disaster, cardiac, or ED saturation) the CVRC will agree to accept all patients meeting OCEMS Cardiovascular Receiving Center triage criteria.
- C. The hospital will maintain the ability to receive field transmitted EKGs.
  1. **Policies and procedures describing 12-lead EKG performance by paramedics, EKG interpretation and transmission, and determination of patient destination are described elsewhere (PR-105, SO-C-15, #310.00).**
- D. The CVRC will have formal written policies which address the following:
  1. **Protocols for triage, diagnosis and Cath lab activation following field notification.**
  2. **Protocols for identification of STEMI patients applicable in the intensive coronary care unit, cath lab, and emergency department at a minimum.**
  3. An emergency department response plan for victims of possible STEMI. Such a plan should include:
    - a. Defining patients who shall receive emergent angiography and who shall receive emergent fibrinolysis, based on physician decisions for individual patients.
    - b. Fibrinolytic therapy protocol to be used only for unforeseen circumstances when PCI of a STEMI patient is not possible with a plan to ensure door-to-needle time within current national standards.
  4. A plan to ensure primary PCI door-to-device times within current national standards.
  5. **Process for the triage and treatment of simultaneously arriving STEMI patients.**
- E. A performance/quality improvement plan that is incorporated into the hospital's quality improvement program which monitors activities involving the CVRC. A summary of QI findings



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relevant to the Orange County CVRC system must be submitted annually to OCEMS by March 30 for the preceding calendar year.

- F. Defined methods for collecting and reporting required Cardiovascular Receiving Center system data elements to OCEMS within the specified time frame.
- G. Defined cardiovascular education and outreach program for the local community and assigned regional hospitals.
- H. **Maintain a contact roster for the clinical personnel, support personnel, and administrative staff that function together as part of the hospital's STEMI team.**

### VII. DATA COLLECTION:

Data will be reported to the OCEMS medical director on a monthly basis and must be current in the Orange County Medical Emergency Data System (OC-MEDS) within 45 days after the end of the preceding month.

**STEMI patient care data submitted to OCEMS shall be submitted to the EMS Authority by OCEMS on a quarterly basis.**

- A. **The STEMI patient care elements shall include prehospital data compliant with the most current version of CEMISIS/NEMSIS (unless the patient arrived by private transport) and hospital patient data.**
- B. **The following data elements will be collected for each ST Elevation Myocardial Infarction case received via EMS from the field, by transfer from hospitals, or by private transport (non-EMS). Patients arriving by non-EMS transport will not have prehospital data. Certain data may not be collected on some CVRC triaged patients transported to the CVRC as part of the emergency medical system if they are not treated in the cath lab:**
  - 1. **Date and time of dispatch**
  - 2. Hospital name with date and time of patient arrival
  - 3. **OCEMS ePCR Number**
  - 4. **Patient name, date of birth, age, gender, and race**
  - 5. Field 12-lead EKG performed.
    - a. **1<sup>st</sup> EKG Date and Time**
    - b. **Confirmation of prehospital EKG transmission**
    - c. 12-Lead EKG confirmed by emergency department physician
    - d. Emergency department physician interpretation
  - 6. Hospital Bypass
    - a. Identify bypassed hospital and reason
  - 7. **Did patient suffer out of hospital cardiac arrest?**
  - 8. Treatment rendered
    - a. Patient to cardiovascular catheterization lab for PCI
    - b. Patient received thrombolytic therapy (including infusion date/time)
  - 9. Time Sequences



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- a. CVRC notified
  - b. Arrival to ED
  - c. Cardiologist notified
  - d. Cardiovascular Cath Lab team notified/activated
  - e. **Cath Lab activation date and time**
  - f. **Arrival in Cardiovascular Cath Lab (date and time)**
  - g. Procedure start time
  - h. Reperfusion time
  10. Culprit lesion, percentage, and pre and post TIMI Flow
  11. Alternative procedures
    - a. Pericardiocentesis
    - b. IABP/Ventricular Support Device
    - c. CABG
    - d. CPR
    - e. Cardioversion
  12. **If transferred**
  13. **Hospital Discharge Date**
  14. **Primary and Secondary Discharge Diagnoses**
  15. Outcome:
    - a. Lived/Died
- C. Data collected across the CVRC system**
1. **Total number of STEMIs treated**
  2. **Total number of STEMI patients transferred**
  3. **Total number and percent of STEMI patients arriving by private transport (non-EMS)**
  4. **The false positive rate of EMS diagnosis of STEMI, defined as the percentage of STEMI alerts by EMS which did not show STEMI on ECG reading by the emergency physician.**

### VIII. QUALITY ASSURANCE / IMPROVEMENT:

- A. The Quality Assurance/Improvement program will include OCEMS selected performance measures or indicators specific to the CVRC System.
  1. **OCEMS will establish a multidisciplinary STEMI Quality Improvement Advisory Committee including both prehospital and hospital members. Representatives of all designated CVRC centers and prehospital providers involved in the STEMI system shall participate in the QI process.**



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- 2. **At a minimum, will review STEMI-related deaths, major complications, and transfers.**
- B. The hospital CVRC performance/quality improvement program may suggest measures and indicators to OCEMS **but will at least include evaluation of program structure, process, and outcome.**
- C. As appropriate, specific CVRC outcomes will be used to compare with national and local performance standards to determine individual CVRC performance.
- D. An annual log of community outreach projects will be maintained by the CVRC describing those actions that are:
  - 1. Community oriented.
  - 2. Regional Hospital oriented.
- E. An in-house quality improvement program for EMS transported STEMI patients should include the following:
  - 1. Death rate (within 30 days, related to procedure regardless of the mechanism).
  - 2. Emergency CABG rate (result of procedure failure or a procedure complication).
  - 3. Vascular complications (PCI access site complication, hematoma large enough to require transfusion, or operative intervention required).
  - 4. Cerebrovascular accident rate (peri-procedure).
- F. **The quality improvement process shall comply with the California Evidence Code, Section 1157.7 to ensure confidentiality and disclosure protection.**

**Approved:**

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Sam J. Stratton, MD, MPH  
OCEMS Medical Director

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OCEMS Administrator

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